FIG. 1

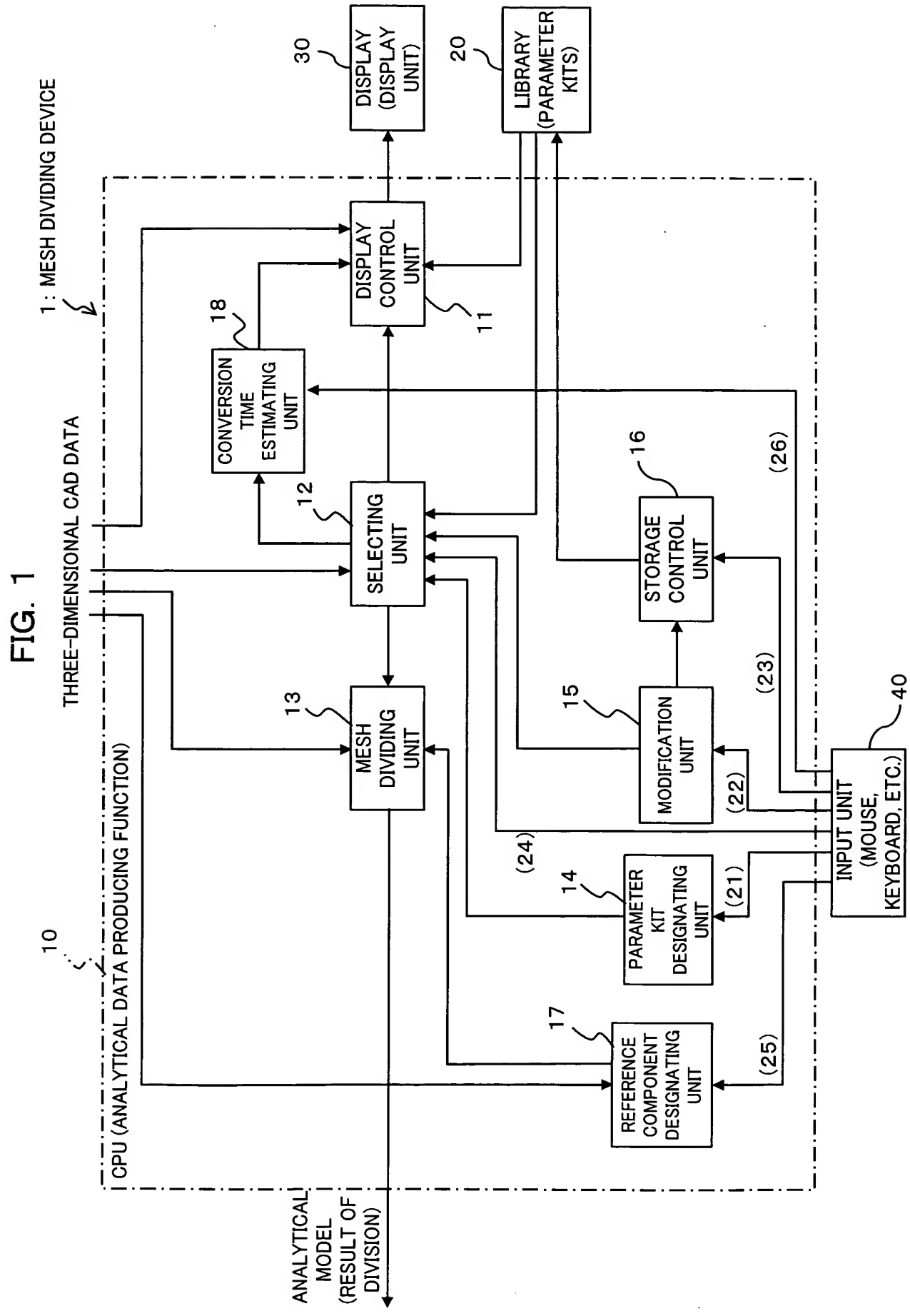

1: MESH DIVIDING DEVICE
THREE-DIMENSIONAL CAD DATA
CPU (ANALYTICAL DATA PRODUCING FUNCTION)
10
DISPLAY (DISPLAY UNIT)
30
LIBRARY (PARAMETER KITS)
20
DISPLAY CONTROL UNIT
11
CONVERSION TIME ESTIMATING UNIT
18
SELECTING UNIT
12
STORAGE CONTROL UNIT
16
MESH DIVIDING UNIT
13
MODIFICATION UNIT
15
PARAMETER KIT DESIGNATING UNIT
14
REFERENCE COMPONENT DESIGNATING UNIT
17
INPUT UNIT (MOUSE, KEYBOARD, ETC.)
40
(21)
(22)
(23)
(24)
(25)
(26)
ANALYTICAL MODEL (RESULT OF DIVISION)

FIG. 2

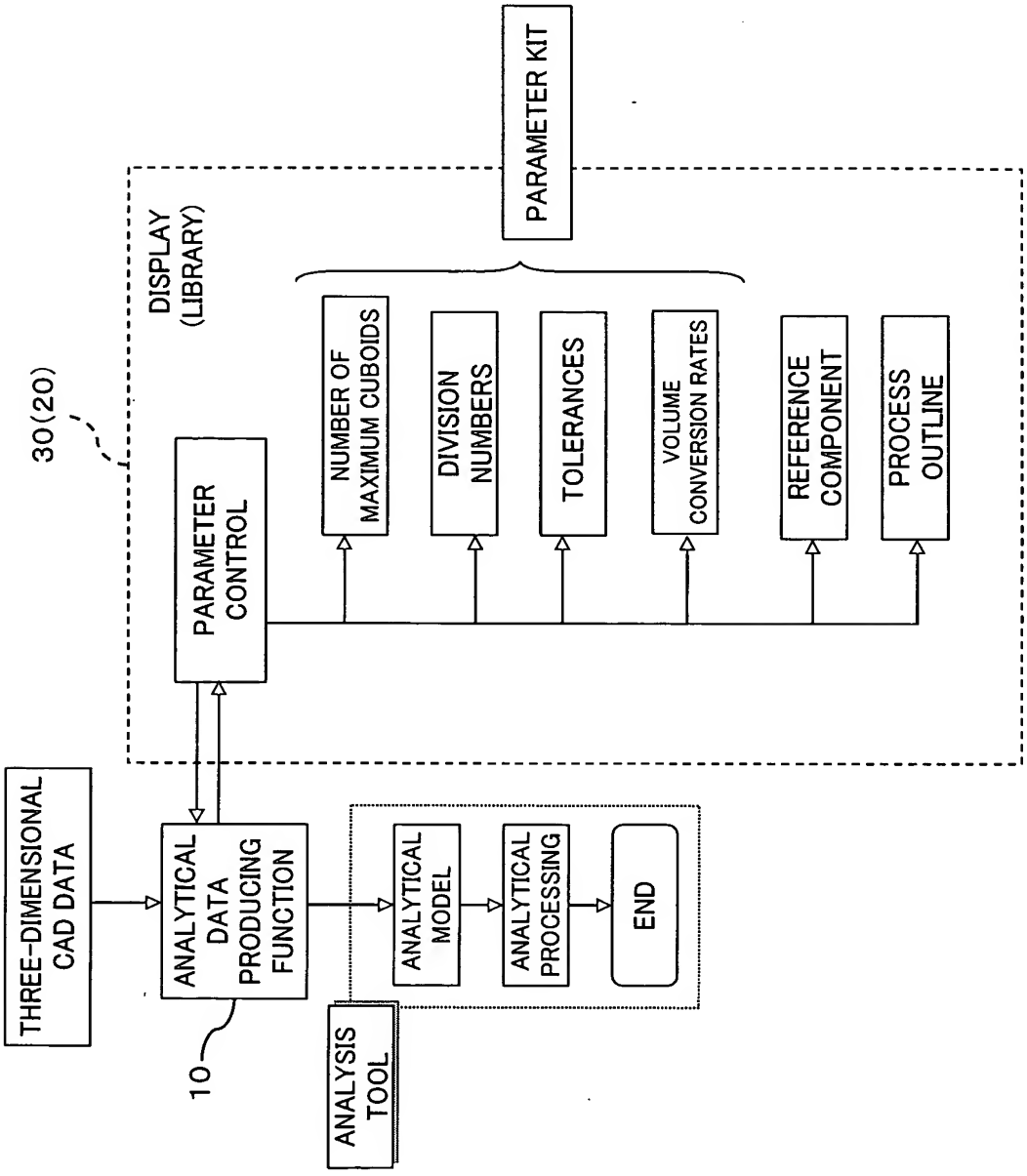

PARAMETER KIT
DISPLAY (LIBRARY)
30(20)
PARAMETER CONTROL
NUMBER OF MAXIMUM CUBOIDS
DIVISION NUMBERS
TOLERANCES
VOLUME CONVERSION RATES
REFERENCE COMPONENT
PROCESS OUTLINE
THREE-DIMENSIONAL CAD DATA
ANALYTICAL DATA PRODUCING FUNCTION
10
ANALYTICAL MODEL
ANALYTICAL PROCESSING
END
ANALYSIS TOOL

FIG. 3

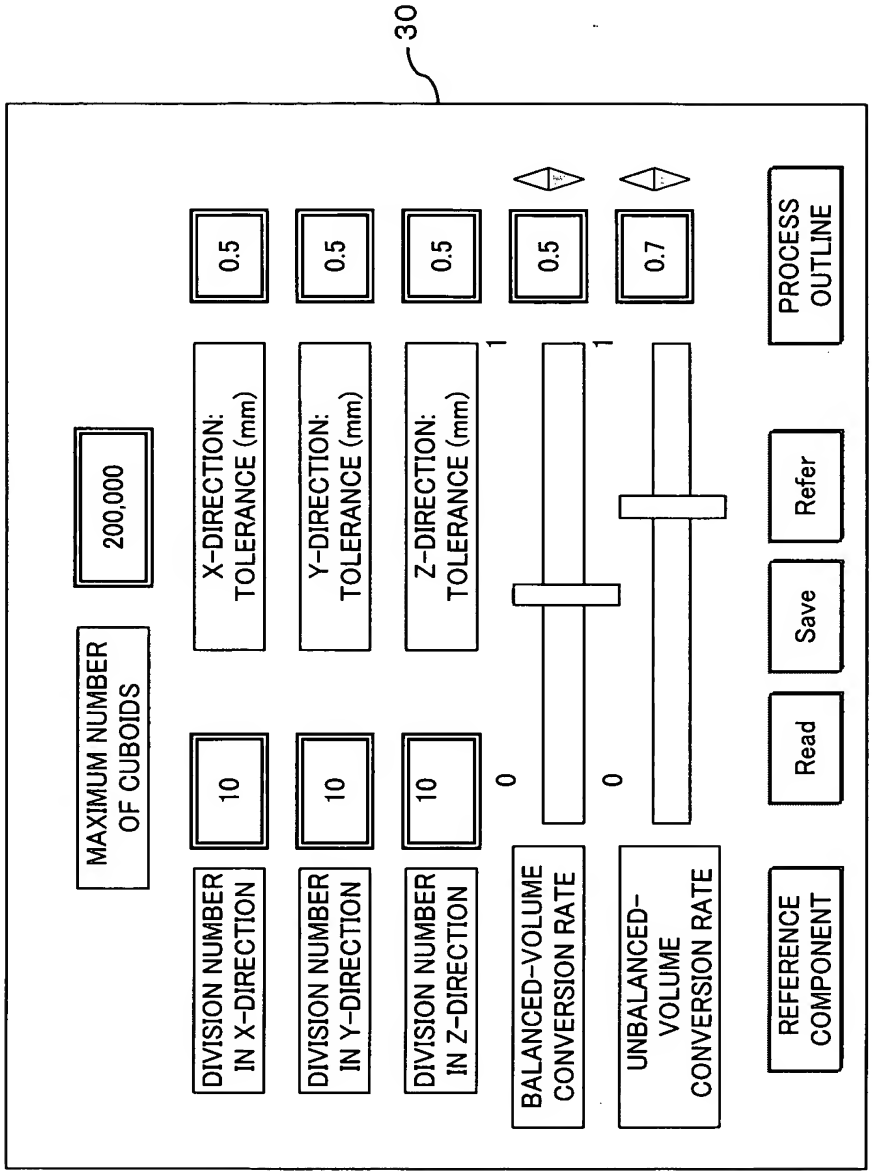

30
MAXIMUM NUMBER OF CUBOIDS
200,000
DIVISION NUMBER IN X-DIRECTION
10
DIVISION NUMBER IN Y-DIRECTION
10
DIVISION NUMBER IN Z-DIRECTION
10
X-DIRECTION: TOLERANCE (mm)
0.5
Y-DIRECTION: TOLERANCE (mm)
0.5
Z-DIRECTION: TOLERANCE (mm)
0.5
BALANCED-VOLUME CONVERSION RATE
0
1
0.5
UNBALANCED-VOLUME CONVERSION RATE
0
1
0.7
REFERENCE COMPONENT
Read
Save
Refer
PROCESS OUTLINE

FIG. 4A

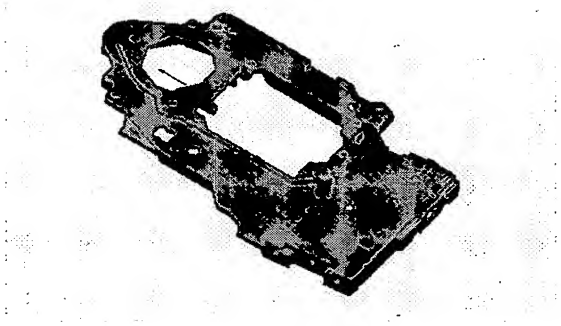


FIG. 4B

MAXIMUM NUMBER OF CUBOIDS: 30

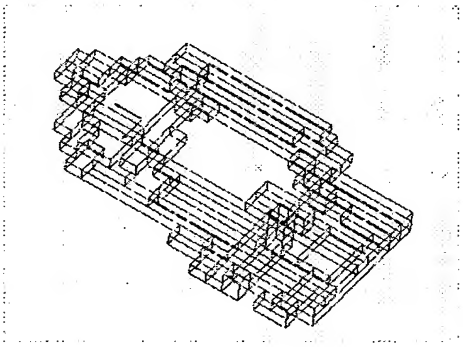


FIG. 4C

MAXIMUM NUMBER OF CUBOIDS: 150

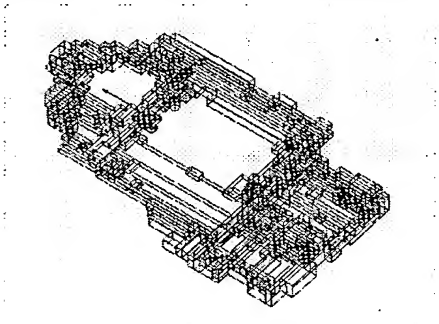


FIG. 5

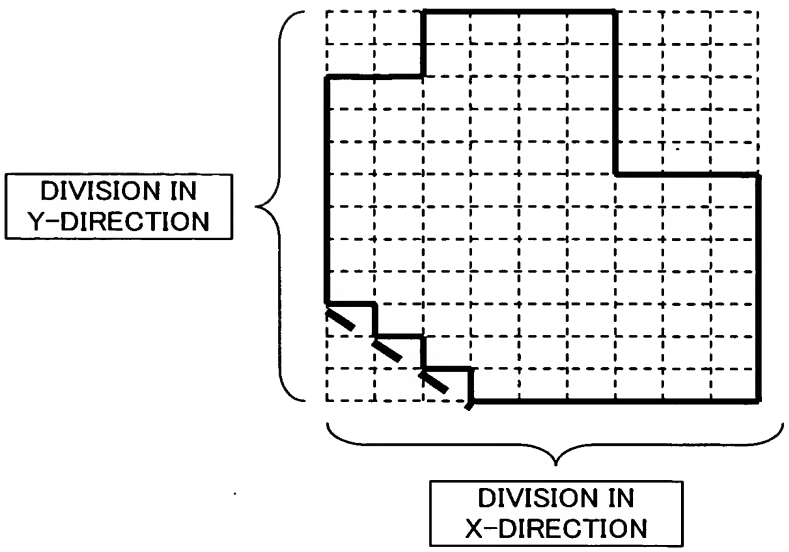


FIG. 6A

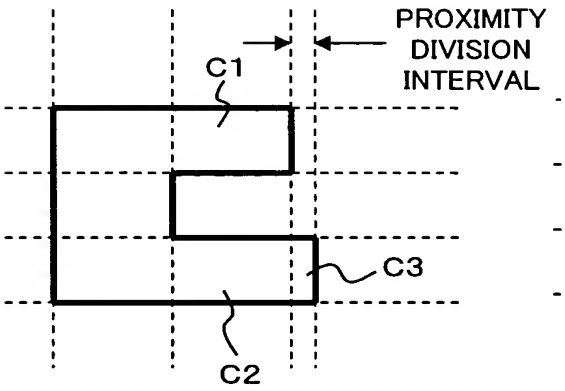


FIG. 6B

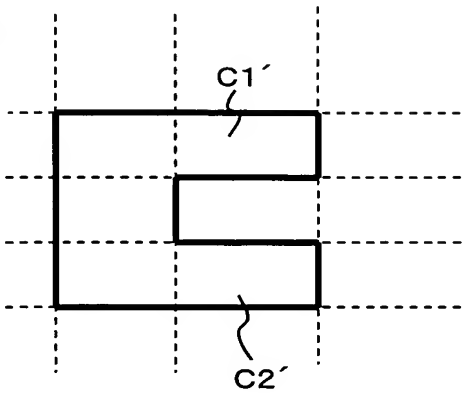


FIG. 7A

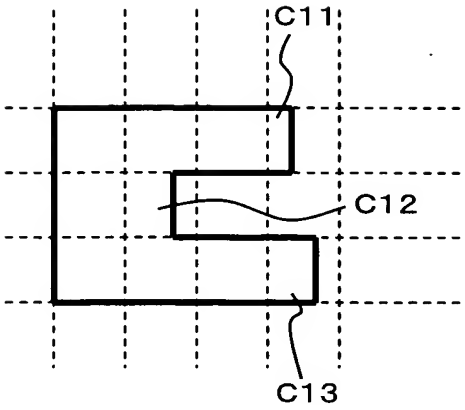


FIG. 7B

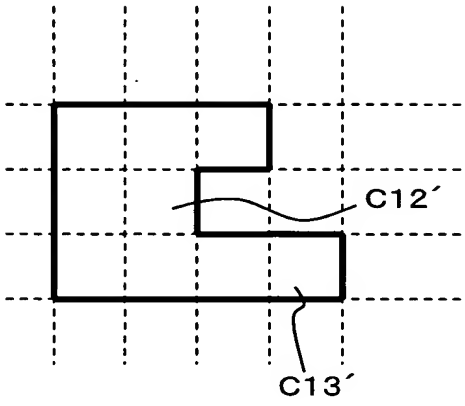


FIG. 8A

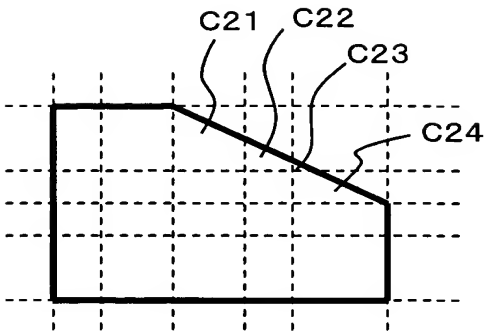


FIG. 8B

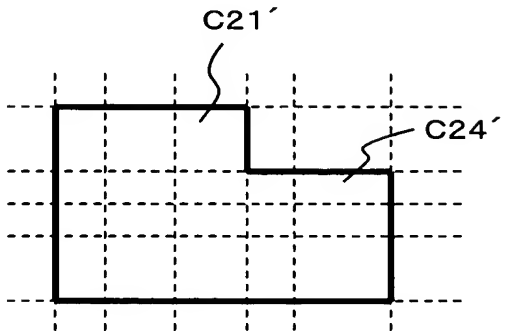


FIG. 9

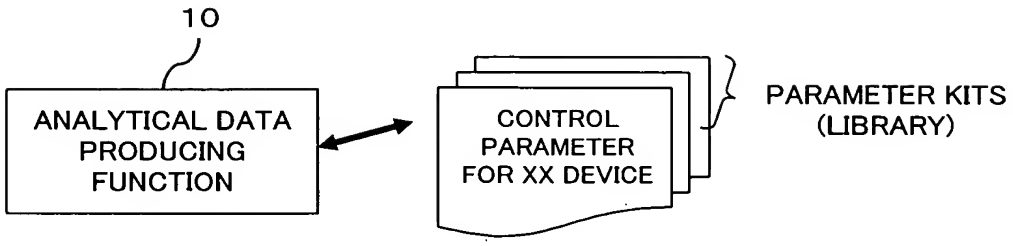

10
ANALYTICAL DATA PRODUCING FUNCTION
CONTROL PARAMETER FOR XX DEVICE
PARAMETER KITS (LIBRARY)

FIG. 10

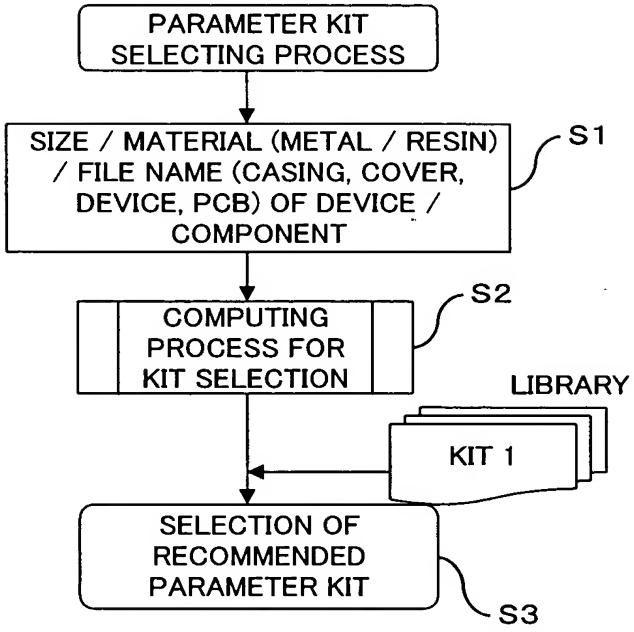

PARAMETER KIT SELECTING PROCESS
SIZE / MATERIAL (METAL / RESIN) / FILE NAME (CASING, COVER, DEVICE, PCB) OF DEVICE / COMPONENT
S1
COMPUTING PROCESS FOR KIT SELECTION
S2
LIBRARY
KIT 1
SELECTION OF RECOMMENDED PARAMETER KIT
S3

FIG. 11A

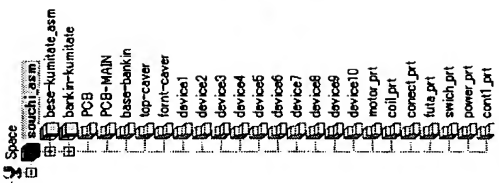


FIG. 11B

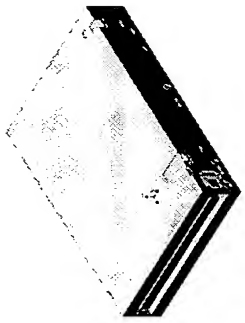


FIG. 11C

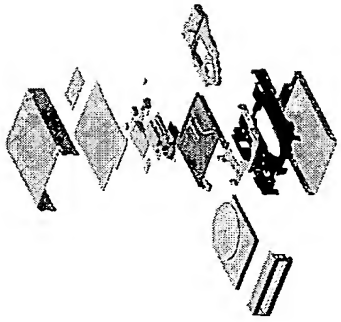


FIG. 12

TABLE A : OF DIMENSIONS

No.	ITEM	VALUE	ITEM	VALUE	ITEM	VALUE
1	NUMBER OF COMPONENTS	45. 0				
2-1	MAXIMUM SIZE OF COMPONENT 01:X	15. 0	MAXIMUM SIZE OF COMPONENT 01:Y	23. 0	MAXIMUM SIZE OF COMPONENT 01:Z	50. 0
2-2	MAXIMUM SIZE OF COMPONENT 02:X	21. 0	MAXIMUM SIZE OF COMPONENT 02:Y	10. 0	MAXIMUM SIZE OF COMPONENT 02:Z	78. 0
...						
2-n	MAXIMUM SIZE OF COMPONENT 0n:X	10. 0	MAXIMUM SIZE OF COMPONENT 0n:Y	23. 0	MAXIMUM SIZE OF COMPONENT 0n:Z	36. 0
...						
2-45	MAXIMUM SIZE OF COMPONENT 45:X	80. 0	MAXIMUM SIZE OF COMPONENT 45:Y	55. 0	MAXIMUM SIZE OF COMPONENT 45:Z	86. 0
3	SIZE OF DEVICE:X	260. 0	SIZE OF DEVICE:Y	450. 0	SIZE OF DEVICE:Z	350. 0

FIG. 13

TABLE B : VALUES OF PHYSICAL PROPERTIES

No.	ITEM	NAME	MATERIAL	VALUE OF PHYSICAL PROPERTY 1	VALUE OF PHYSICAL PROPERTY 2	VALUE OF PHYSICAL PROPERTY 3
4-1	COMPONENT:01	PCB	EPOXY RESIN	0. 3	1. 4	1190
4-2	COMPONENT:02	PCB	EPOXY RESIN	0. 3	1. 4	1190
...						
4-n	COMPONE:0n	COVER	STEEL	43. 0	0. 5	7850
...						
4-45	COMPONE:45	DEVICE	CERAMIC	36. 0	0. 8	3890

FIG. 14

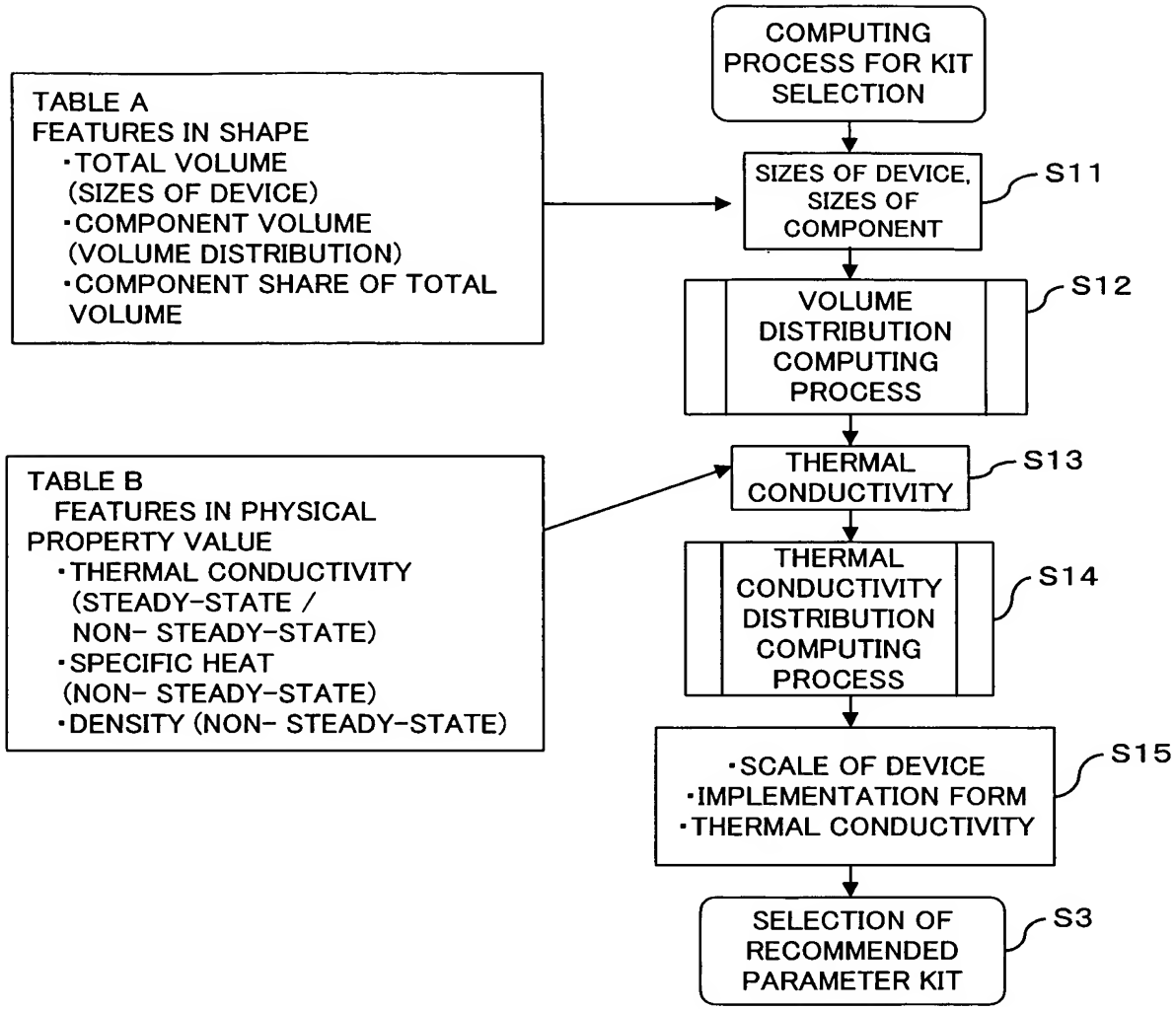

COMPUTING PROCESS FOR KIT SELECTION
TABLE A
FEATURES IN SHAPE
・TOTAL VOLUME (SIZES OF DEVICE)
・COMPONENT VOLUME (VOLUME DISTRIBUTION)
・COMPONENT SHARE OF TOTAL VOLUME
SIZES OF DEVICE, SIZES OF COMPONENT
S11
VOLUME DISTRIBUTION COMPUTING PROCESS
S12
TABLE B
FEATURES IN PHYSICAL PROPERTY VALUE
・THERMAL CONDUCTIVITY (STEADY-STATE / NON- STEADY-STATE)
・SPECIFIC HEAT (NON- STEADY-STATE)
・DENSITY (NON- STEADY-STATE)
THERMAL CONDUCTIVITY
S13
THERMAL CONDUCTIVITY DISTRIBUTION COMPUTING PROCESS
S14
・SCALE OF DEVICE
・IMPLEMENTATION FORM
・THERMAL CONDUCTIVITY
S15
SELECTION OF RECOMMENDED PARAMETER KIT
S3

FIG. 15A

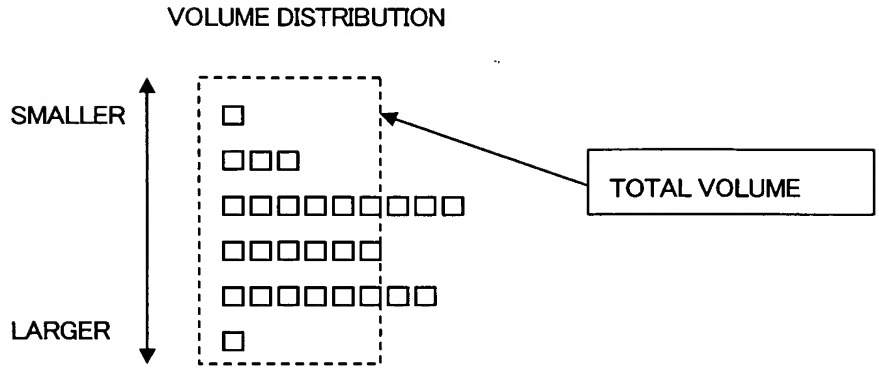


FIG. 15B

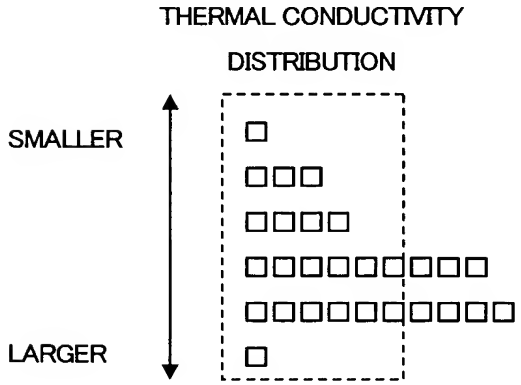


FIG. 16

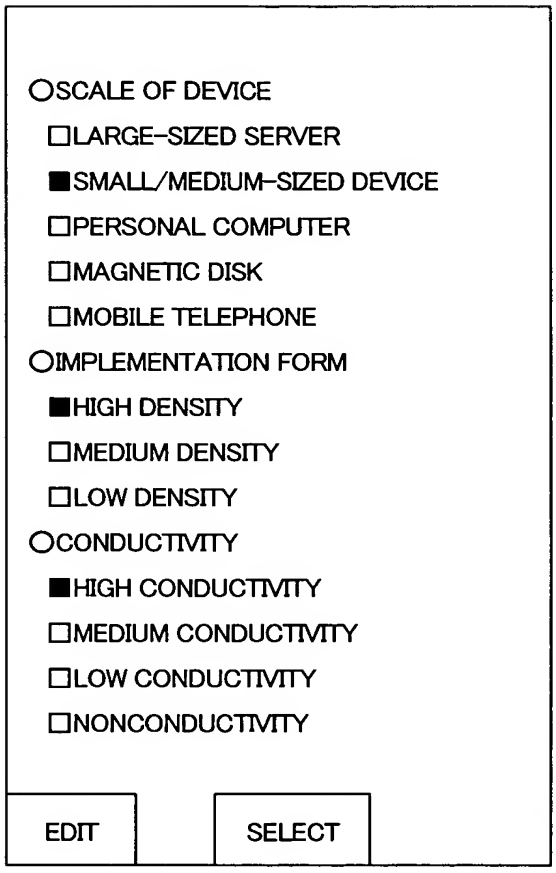

○SCALE OF DEVICE
□LARGE-SIZED SERVER
■SMALL/MEDIUM-SIZED DEVICE
□PERSONAL COMPUTER
□MAGNETIC DISK
□MOBILE TELEPHONE
○IMPLEMENTATION FORM
■HIGH DENSITY
□MEDIUM DENSITY
□LOW DENSITY
○CONDUCTIVITY
■HIGH CONDUCTIVITY
□MEDIUM CONDUCTIVITY
□LOW CONDUCTIVITY
□NONCONDUCTIVITY
EDIT
SELECT

FIG. 17

PARAMETER KIT SELECTION TABLE

	KIT 1	KIT 2	KIT 3	KIT 4
○SCALE OF DEVICE				
□LARGE-SIZED SERVER	○			
■SMALL/MEDIUM-SIZED DEVICE		○		
...				○
□MOBILE TELEPHONE			○	
○IMPLEMENTATION FORM				
■HIGH DENSITY		○	○	
...				○
□LOW DENSITY	○			
○CONDUCTIVITY				
■HIGH CONDUCTIVITY	○	○		
...			○	
□NONCONDUCTIVITY				○

FIG. 18A

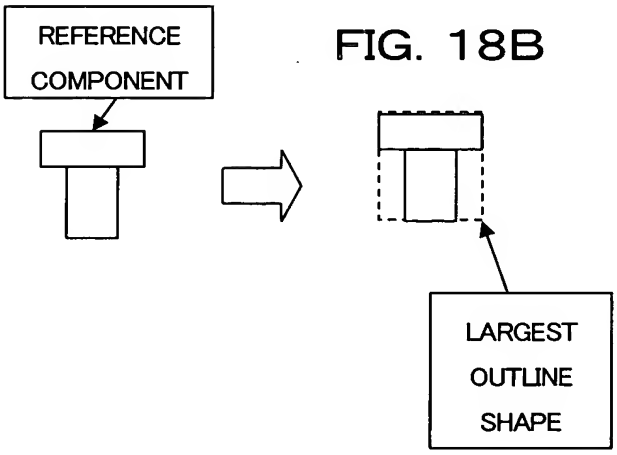


FIG. 18B

FIG. 18C

MAXIMUM X-VALUE	5. 0
MAXIMUM Y-VALUE	3. 5
MAXIMUM Z-VALUE	3. 5

FIG. 19

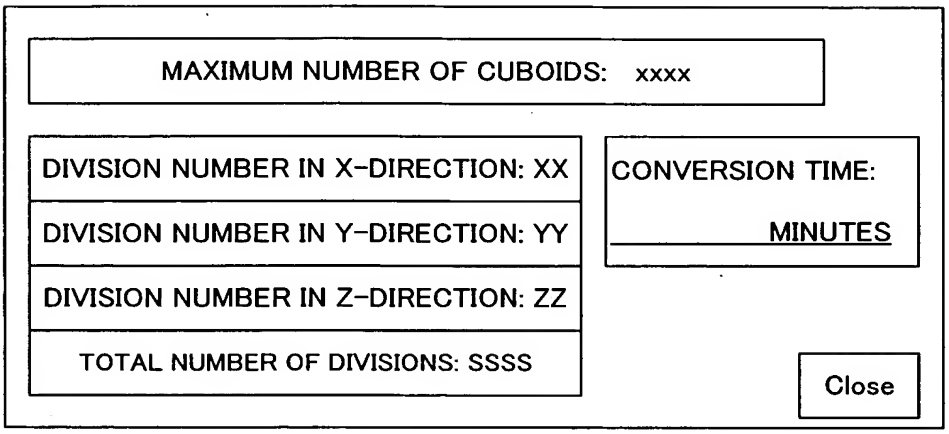

MAXIMUM NUMBER OF CUBOIDS: xxxx
DIVISION NUMBER IN X-DIRECTION: XX
DIVISION NUMBER IN Y-DIRECTION: YY
DIVISION NUMBER IN Z-DIRECTION: ZZ
TOTAL NUMBER OF DIVISIONS: SSSS
CONVERSION TIME:
MINUTES
Close

FIG. 20

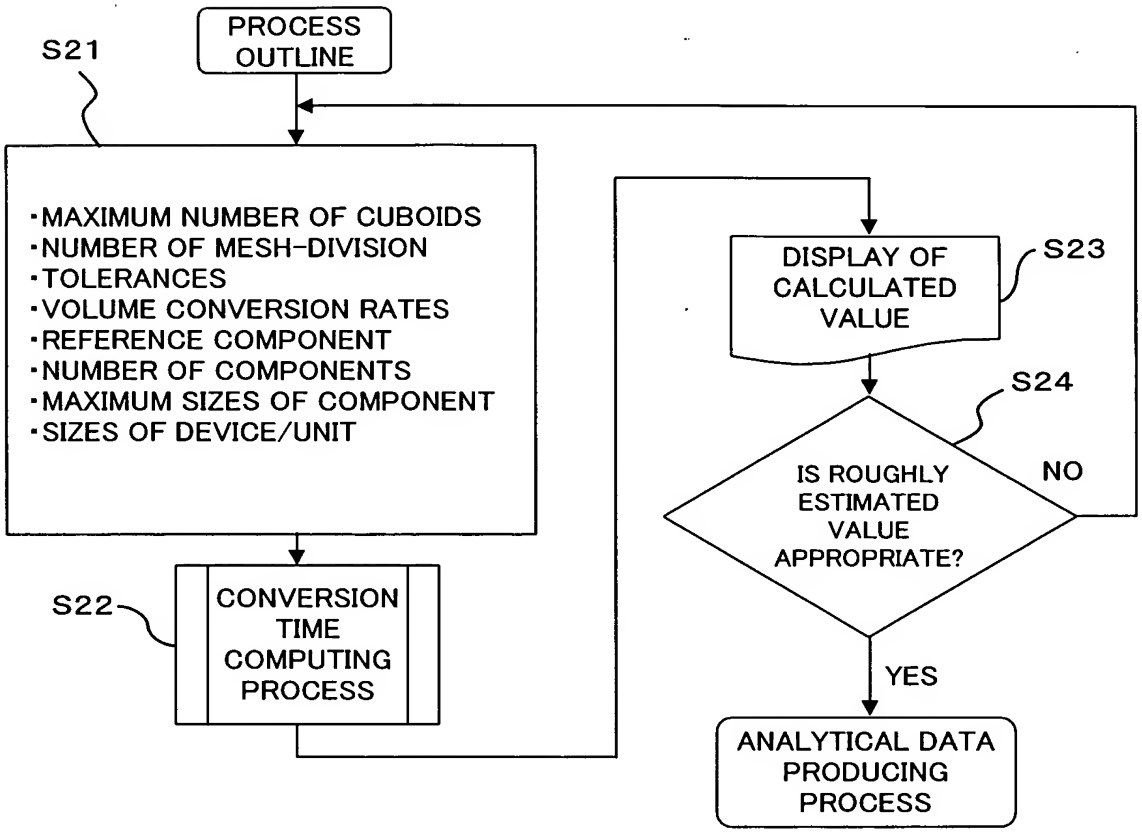
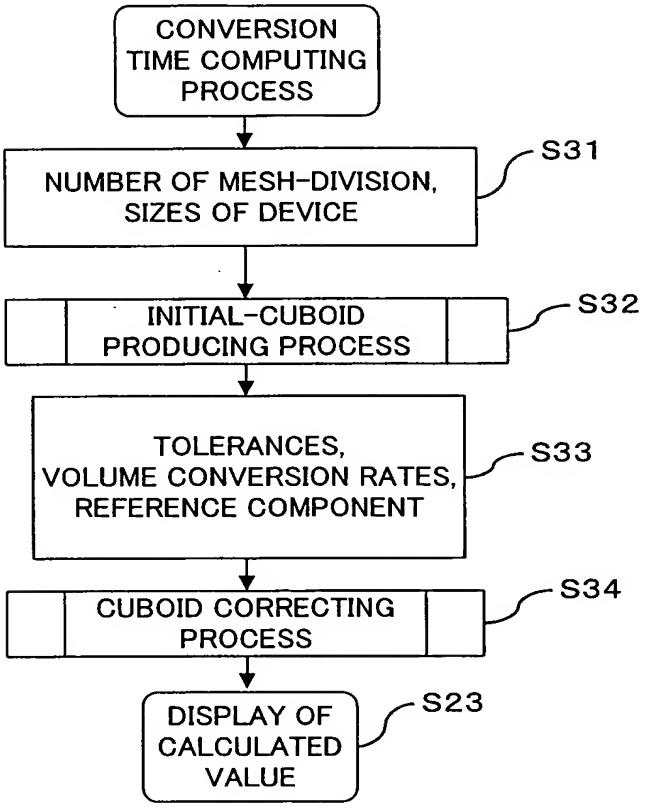

PROCESS OUTLINE
S21
·MAXIMUM NUMBER OF CUBOIDS
·NUMBER OF MESH-DIVISION
·TOLERANCES
·VOLUME CONVERSION RATES
·REFERENCE COMPONENT
·NUMBER OF COMPONENTS
·MAXIMUM SIZES OF COMPONENT
·SIZES OF DEVICE/UNIT
S22
CONVERSION TIME COMPUTING PROCESS
DISPLAY OF CALCULATED VALUE
S23
S24
IS ROUGHLY ESTIMATED VALUE APPROPRIATE?
NO
YES
ANALYTICAL DATA PRODUCING PROCESS

FIG. 21

TABLE C : OF PARAMETERS

No.	ITEM	VALUE	ITEM	VALUE	ITEM	VALUE
1	MAXIMUM NUMBER OF CUBOIDS	200				
2	NUMBER OF MESH-DIVISION : X	20	NUMBER OF MESH-DIVISION : Y	40	NUMBER OF MESH-DIVISION Z	20
3	TOLERANCE: X	0. 5	TOLERANCE: Y	0. 5	TOLERANCE: Z	0. 5
4	BALANCED-VOLUME CONVERSION RATE	0. 4				
5	UNBALANCED-VOLUME CONVERSION RATE	0. 7				
6	SIZE OF REFERENCE COMPONENT: X	65. 0	SIZE OF REFERENCE COMPONENT: Y	32. 0	SIZE OF REFERENCE COMPONENT: Z	50. 0

FIG. 22


CONVERSION TIME COMPUTING PROCESS
NUMBER OF MESH-DIVISION, SIZES OF DEVICE
S31
INITIAL-CUBOID PRODUCING PROCESS
S32
TOLERANCES, VOLUME CONVERSION RATES, REFERENCE COMPONENT
S33
CUBOID CORRECTING PROCESS
S34
DISPLAY OF CALCULATED VALUE
S23